



DEPARTMENT OF THE AIR FORCE  
AIR FORCE RESEARCH LABORATORY  
WRIGHT-PATTERSON AIR FORCE BASE OHIO 45433

21 December 2001

MEMORANDUM FOR US EPA

NCEA (MD-52)  
RTP, NC 27711  
ATTN: ANNIE M. JARABEK

FROM: Kyung O. Yu  
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SUBJECT: Consultative Letter, AFRL-HE-WP-CL-2002-0001, Intravenous kinetics of radiolabeled iodide in tissues of adult male Sprague Dawley rat dosed with  $^{125}\text{I}$  plus carrier.

1. This consultative letter presents as additional male rat data that was not available for publication in the technical report (AFRL-HEST-WP-TR-2000-0076; Effects of Perchlorate on Thyroidal Uptake of Iodide with corresponding Hormonal Changes) submitted in July 2000. These data have been used in development of a physiologically based pharmacokinetic model for the male rat (AFRL-HEST-WP-CL-2001-0005).
2. Male Sprague-Dawley (SD) rats ( $n = 6$  per time point) were dosed with  $^{125}\text{I}$  plus carrier ( $33 \mu\text{g/kg } ^{127}\text{I}$  in physiological saline) via a single tail vein injection. They were sacrificed at 15 min, 1, 2 and 4 hr post-dosing to collect thyroid, serum and skin as well as stomach, intestine and their contents after  $\text{CO}_2$  asphyxiation. Methods to analyze the  $^{125}\text{I}$  levels in tissues are detailed in the technical report (AFRL-HEST-WP-TR-2000-0076).
3. Table 1 illustrates iodide levels in tissues of male rat. At 0.5 hr post-dosing, the highest  $^{125}\text{I}$  levels were detected in the thyroid followed by stomach contents. After 1 hr post-dosing, the concentration ratios of tissue:serum were greater than one in stomach contents and skin, which suggests iodide sequestration in these tissues. Large standard deviations in the stomach contents data at 1 and 4 hr post dosing indicate the dynamic states of this tissue during the experimental time frames.

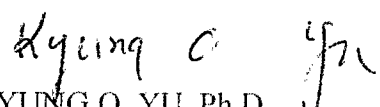
Table 1.  $^{125}\text{I}^-$  concentration in tissues of SD male rat dosed with  $^{125}\text{I}^-$  plus carrier (33  $\mu\text{g/kg}$ )

Time points	Thyroid total* ( $\mu\text{g/g}$ )	Serum (ng/mL) total / free	Stomach contents total (ng/g)	Intestine contents total (ng/g)	Skin total (ng/g)
15 min	$2.84 \pm 2.69$	$44.7 \pm 15.0 / 37 \pm 12$	$126 \pm 113$	$24 \pm 17$	$31.9 \pm 20.2$
1 hr	$14.68 \pm 4.06$	$50.5 \pm 5.9 / 40.5 \pm 4$	$545 \pm 429$	$51 \pm 20$	$65.5 \pm 15.7$
2 hr	$20.31 \pm 6.84$	$36.6 \pm 3.9 / 29.9 \pm 3$	$458 \pm 179$	$30 \pm 8$	$52.1 \pm 17.8$
4 hr	$34.89 \pm 13.83$	$32.0 \pm 6.2 / 25.9 \pm 4.7$	$535 \pm 350$	$32 \pm 15$	$56 \pm 11.7$

Data are mean  $\pm$  standard deviation., n = 6

\*Total includes bound iodine and free iodide.

4. For further information, please contact me by phone: (937) 255-5150 ext. 3176, fax: (937) 255-1474 or e-mail: kyung.yu@wpafb.af.mil.

  
 KYUNG O. YU, Ph.D.  
 Operational Toxicology Branch

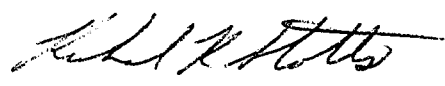
1<sup>st</sup> Ind, AFRL/HES

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ATTN: MS. ANNIE JARABEK

This letter report has been coordinated at the branch level and is approved for release.

  
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